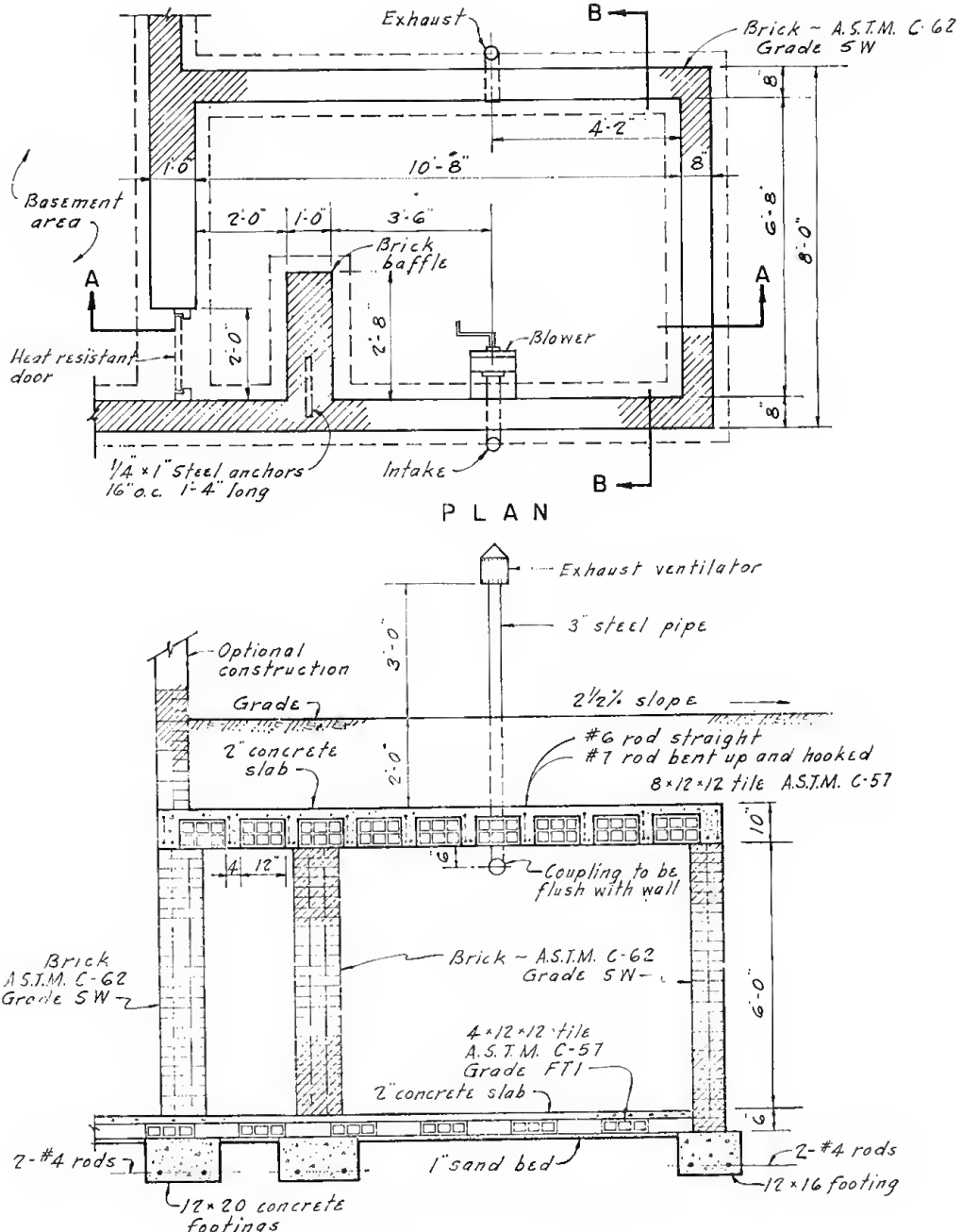
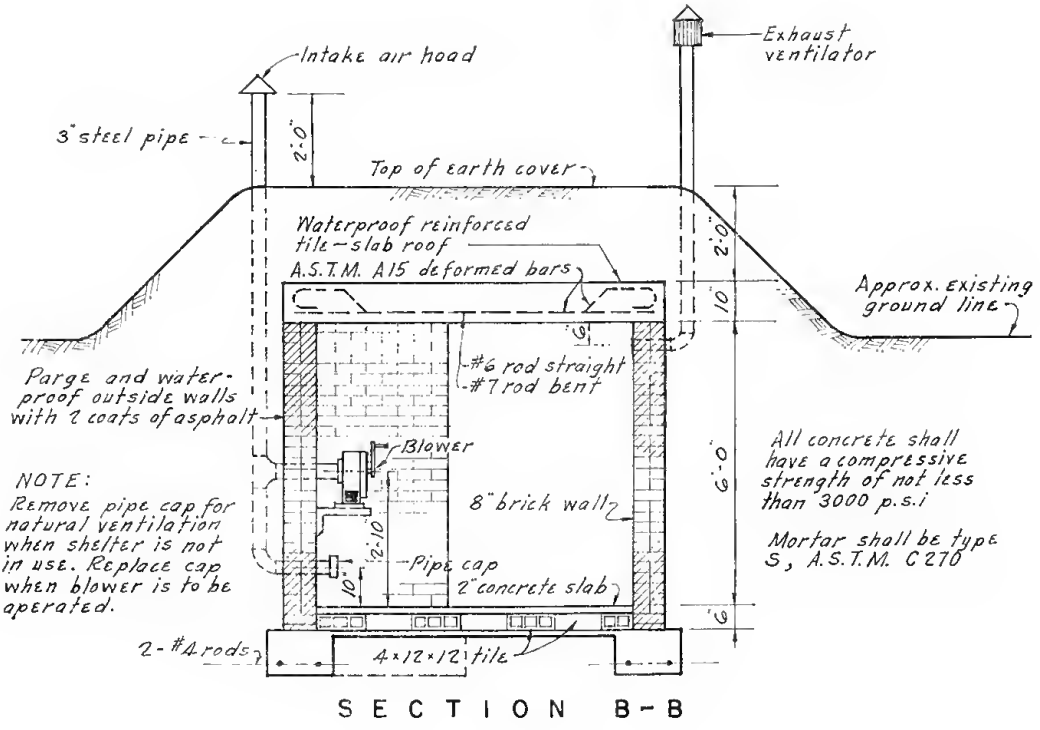
FAMILY SHELTER SERIES PSD F–61–8

Belowground New Construction Clay Masonry Shelter

GENERAL INFORMATION

This shelter will provide protection against the effects of radioactive fallout. It can also protect from limited blast overpressures. The shelter is located belowground outside a house but is reached from the basement. Its principal advantages are in flexibility of shape and design to conform to the house design and in the use of materials that tie in with the new construction of a house. Because of the headroom and interior space the shelter can be used for other purposes.


Exhaust
B
Brick ~ A.S.T.M. C-62
Grade SW
8"
4'-2"
1'-0"
10'-8"
8"
Basement area
2'-0"
1'-0"
3'-6"
Brick baffle
6'-8"
8'-0"
A
A
2'-8"
Blower
2'-0"
Heat resistant door
8"
1/4"x1" steel anchors
16" o.c. 1'-4" long
Intake
B
PLAN
Exhaust ventilator
3" steel pipe
3'-0"
Optional construction
Grade
2 1/2% slope
2" concrete slab
2'-0"
#6 rod straight
#7 rod bent up and hooked
8x12x12 tile A.S.T.M. C-57
10"
4
12"
6
Coupling to be flush with wall
Brick A.S.T.M. C-62 Grade SW
Brick ~ A.S.T.M. C-62 Grade SW
6'-0"
4x12x12 tile A.S.T.M. C-57 Grade FTI
2" concrete slab
6
2-#4 rods
1" sand bed
2-#4 rods
12x16 footing
12x20 concrete footings
SECTION A-A



SECTION B-B

TECHNICAL SUMMARY

Space and Occupancy.—The shelter in this design has over 70 square feet of area and 420 cubic feet of space. It will provide occupancy for six persons.

Availability and Cost of Materials.—Structural clay masonry units, brick, and structural tile are available in concrete-block plants and lumberyards. Cost of the materials and equipment for the basic shelter is estimated at $300 to $350. Labor cost should run approximately $250 to $300 when performed as part of new house construction.

Fallout Protection Factor.—The protection factor for a shelter of this type is over 1000.

Blast Protection.—This shelter has a structural blast resistance of 5-pounds-per-square-inch overpressure.

Ventilation.—Ventilation equipment and pipe are required. A hand-operated blower should be specified to furnish at least 20 cubic feet of air per minute. The air is exhausted through a separate ventpipe.

Construction Time.—A home-construction project that includes this shelter will not require additional trades or crafts not already on the project. The time for construction of this shelter could increase normal house construction time by a few days.

Structural Life Expectancy.—Assuming normal construction practices, this structure, with a minimum of maintenance, should last more than 30 years.

CONSTRUCTION SEQUENCE

No construction sequence is given for this shelter because the work would probably be supervised by a contractor familiar with new construction.

BILL OF MATERIALS

Item	*Quantity*
Roof:	
8″ x 12″ x 12″ structural clay tile ASTM–C57—grade FTI.	72 pieces.
Steel reinforcing, No. 6 deformed bars 7′6″ length, ASTM–A–15—Straight.	10 pieces.
Steel reinforcing, No. 7 deformed bars 10′ length, bent up and hooked ASTM–A–15.	10 pieces.
Concrete, minimum 3,000 pounds per square inch	1.5 cubic yards.
Walls:	
Brick, standard size (2⅔″ x 4″ x 8″) ASTM–C62—grade SW.	3,800 pieces.
Anchors (¼″ x 1″ x 4″) steel	4.
Mortar (1–¼–3¾ cement-lime-sand)	65 cubic feet.
Floor:	
Tile (4″ x 12″ x 12″) structural clay ASTM–C57—grade FTI.	96 pieces.
Concrete, minimum 3,000 pounds per square inch	0.7 cubic yard.
Footings:	
Concrete, minimum 3,000 pounds per square inch	1.0 cubic yard.
Steel reinforcing, No. 4 reinforcing bars ASTM–A15	68 linear feet.
Miscellaneous:	
Parge 1–¼–3¾ mortar ASTM–C270—Type M	8 cubic feet.
Asphalt	5 gallons.
Blower (at least 20-cubic-feet-per-minute rating)	1.
Mounting bracket, blower	1.
Intake and exhaust ventpipe, 3″ steel (sufficient for both intake and vent pipes).	16 linear feet.
Fittings:	
Ells 3″ steel	2.
Tees 3″ steel	1.
Ventpipe cap	1.
Flyscreen 7″ x 7″ (for vent and intake pipes)	2.